

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (withdrawn) A method for generating a nucleic acid molecule with precise user control, the method comprising:

a) providing a plurality of nucleic acids immobilized on a surface;

b) providing a nucleic acid molecule attached to a protecting group;

c) contacting said immobilized nucleic acid molecule with said nucleic acid molecule attached to a protecting group;

d) elongating said immobilized nucleic acid molecule; and

e) dissociating said immobilized nucleic acid molecule from said protecting group thereby extending said immobilized nucleic acid molecule.

2. (withdrawn) The method of Claim 1, wherein said protecting group comprises proteins, carbohydrates, diphosphates, phosphate derivatives, nucleotides, oligonucleotides, or combinations thereof.

3. (withdrawn) The method of Claim 1, wherein the removal of said protecting group is accomplished by the application of heat, proteases, phosphatases, restriction enzymes, or combinations thereof.

4. (currently amended) A method for removing or controlling errors in nucleic acid molecules comprising arbitrary user-specified sequence composition and length, the method comprising:

a) providing a solid support for synthesis of a nucleic acid;

b) synthesizing a nucleic acid attached to the solid support;

c) passing the solid support and the synthesized nucleic acid through a channel opening, the channel opening supporting with at least one detector;

d) detecting, using the at least one detector, errors in the sequence of the synthesized nucleic acid; and

e) correcting the errors in the sequence of the synthesized nucleic acid.

5. (currently amended) A method for removing or controlling errors in nucleic acid molecules comprising arbitrary user-specified sequence composition and length, the method comprising:

a) synthesizing a nucleic acid by addition of a nucleotide or oligonucleotide having a with at least one 5' protecting group;

b) ~~eliminating any preventing~~ deletion errors ~~present~~ in the sequence of the synthesized nucleic acid by the steps of:

deprotecting the synthesized nucleic acid by using a deprotection wash to remove ~~the at least one~~ 5' protecting group;

flowing the deprotection wash and ~~the any~~ removed 5' protecting group through a channel opening; and

monitoring the flowed wash for the presence ~~or absence of the a~~ removed 5' protecting group, ~~comprising +and~~ recycling the flowed wash until the presence of the removed at least one 5' protecting group is detected in the wash; and

c) repeating steps a) and b) until ~~all deletion errors in~~ the sequence of the synthesized nucleic acid comprises the user-specified sequence composition and length ~~are eliminated~~.

6. (withdrawn) A method for detecting the addition of nucleotides to nucleic acid molecules comprising:

a) providing a solid support for the attachment of a nucleic acid;

b) elongating said attached nucleic acid;

c) detecting the force exerted on the growing nucleic acid molecule;

d) detecting errors in nucleic acid synthesis; and

e) correcting errors in nucleic acid synthesis.

7. (withdrawn) A method for removing or controlling errors in nucleic acid molecules comprising arbitrary user-specified sequence composition and length, the method comprising the parallelization of single-molecule systems with and without arrays of light sources and detectors.
8. (withdrawn) A method for the microfabrication of quadrupole arrays, the method comprising:
- a) defining bond pads and lithographically defining and depositing a layer of diagonal metal wires on a silicon substrate;
 - b) lithographically designing and depositing a film of soft magnetic material over a portion of the metal lines; and
 - c) lithographically defining and depositing a second layer of metal lines over the magnetic film layer.
9. (withdrawn) A method for independently controlling particles, the method comprising controlling said particles via an electric field, a magnetic field, optical tweezers, or any combinations thereof.
10. (withdrawn) A method for synthesizing polymers in which individual molecules are monitored during synthesis to observe and evaluate the reaction products.
11. (cancelled)
12. (currently amended) The method of claim 4, wherein the solid support is a bead or particle and further comprising the step of detecting an increase in electrophoretic force exerted by the synthesized nucleic acid on the solid support, wherein the increase in electrophoretic force is being caused by the growth of the synthesized nucleic acid.
13. (previously amended) The method of claim 5, wherein steps (a)-(c) are carried out using a plurality of light sources and detectors.
14. (currently amended) The method of claim 4, ~~wherein~~ the synthesized nucleic acid comprising has at least one an added nucleotide or oligonucleotide with a 5' protecting group and the method further comprising the steps of:

eliminating any ~~(f) at any point after step b), preventing deletion errors present in~~
the sequence of the synthesized nucleic acid by the steps of:

deprotecting the synthesized nucleic acid by using a deprotection wash to remove ~~the at least one~~ 5' protecting group;

flowing the deprotection wash and ~~the any~~ removed 5' protecting group through a channel opening;

monitoring the flowed wash for the presence ~~or absence of the a~~ removed 5' protecting group~~[[;]], comprising~~ recycling the flowed wash until the presence of ~~the removed at least one~~ 5' protecting group is detected in the wash; and

repeating ~~at least the steps~~ step of ~~synthesizing and preventing eliminating~~ until ~~all deletion errors in~~ the sequence of the synthesized nucleic acid ~~comprises the user-~~
~~specified sequence composition and length are eliminated.~~

15. (currently amended) The method of claim 14, wherein the solid support is a bead or particle and further comprising the step of detecting an increase in electrophoretic force exerted by the synthesized nucleic acid on the solid support, wherein the increase in electrophoretic force is ~~being~~ caused by the growth of the synthesized nucleic acid.

16. (previously amended) The method of claim 4, wherein steps (b) - (e) are carried out using a plurality of light sources and detectors.

17. (previously amended) The method of claim 4, wherein the errors in the sequence of the synthesized nucleic acid are selected from the group consisting of insertion errors, deletion errors, and wrong base incorporation errors.

18. (cancelled)